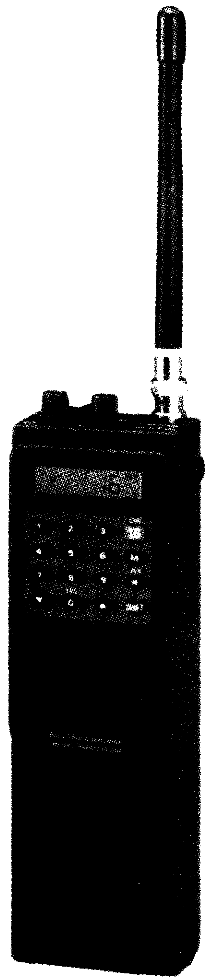
FURUNO

MARINE VHF
HANDHELD TRANSCEIVER

MODEL FM-77

OPERATOR'S HANDBOOK



PUB.NO.OME-55680-B
(9605,ETMI) FM-77

00080698300

FURUNO ELECTRIC CO., LTD.

⚠ WARNING



Do not open the equipment.

This equipment uses high voltage electricity which can shock, burn or cause serious injury. Only qualified personnel should work inside the equipment.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

Turn off the power immediately if water leaks into the equipment, or the equipment is emitting smoke.

Continued use of the equipment can cause fire or electrical shock.

Keep heater away from equipment.

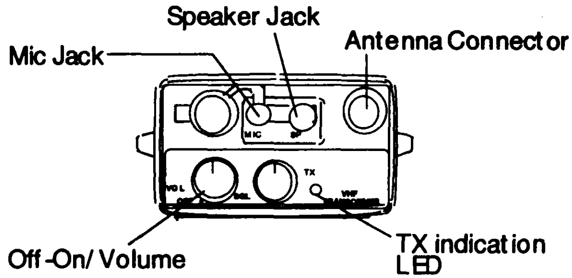
Heat can alter equipment shape, which can cause fire or electrical shock.

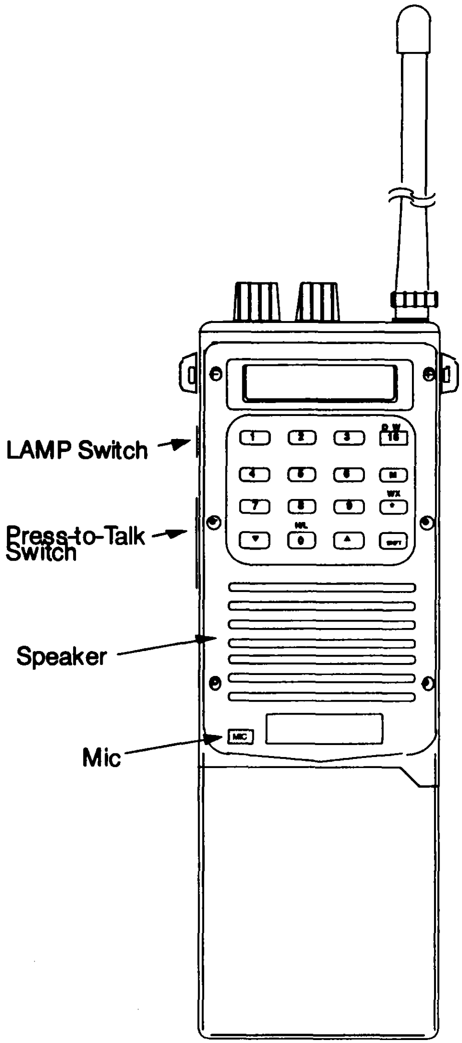
Any repair work must be done by a licensed radio technician.

Improper repair work can cause electrical shock or fire.

CONTROL LAYOUT

PANEL LAYOUT





OPERATING INSTRUCTIONS

(*) Applicable only where authorized

1 GENERAL

1.1 Type of Transceiver

The FM-77 handheld transceiver is available in 5 versions as follows:

1) International Version:
   International channels, Dual Watch, Multi Watch, Manual scan
2) U.S. Version:
   International channels, U.S. channels, Auto scan, Manual scan, Weather channels, Dual Watch, Multi Watch.
3) Special Version:
   Function of International or U.S. version plus limited private channels and/or auto scan according to authorization.
4) France
5) Holland

1.2 Mode

The FM-77 is provided with the following channel modes:

1) Normal Channel Mode
   Any authorized channel can be selected by pressing the channel number keys or manual scan key.
2) Weather Channel Mode(*)
   Any channel programmed in the weather channel address can be selected by manual scan.
3) Private Channel Mode(*)
   Any channel programmed in the private channel address can be selected by manual scan.

1.3 Charging the Battery Pack

When you first operate after purchase of this radio set, recharge the battery pack through a wall charger supplied as standard or through a quick charger which is optionally available. Normal charging time is about 15 hours with the wall charger BC-500, 60-90 minutes with the quick charger, BC-501N or BC-503N.

1.4 Auto Scan (*)

Auto scan is activated by pressing [SHIFT][Δ]. "SCN" is displayed and the receiver automatically scans channels upward in each channel mode. In the normal channel mode the channel is automatically advanced upward every 0.2 seconds; In the weather (*) or private (*) channel modes, only the weather or private channels are scanned, respectively. When the signal is received (squelch opened), scan stops. To restart scanning, press (Δ). To cease scanning, press [SHIFT][Δ] again, [16], or PTT switch.

NOTE: When two keys are pressed in succession, the interval should be less than 2 seconds. Otherwise the radio will revert to the earlier status.

1.5 Manual Scan

You can step up or down the channels by pressing [Δ] or [∇] keys. If you keep the key pressed, the channel will step up or down quickly until key is released.

2 CHANNEL SELECTION

2.1 Ordinary Channel

Desired channel is selected by pressing 2 numeral keys in succession. For example to select CH6, press [0] [6], and to select CH88, press [8] [8].

2.2 Channel 16 (International Distress and Call)

CH16 may be entered either by pressing [1][6] keys or [16] key. You should not use this channel for normal traffic other than for contacting a coastal station or in case of emergency. Care should be taken to prevent inadvertent selection of Channel 16.

NOTE1: The 2nd digit should be entered within 2 seconds after the 1st digit is entered; otherwise the 1st digit entered flashes for another 2 seconds and then the FM-77 reverts to the original channel.

NOTE2: When unprogrammed channels (CH29, CH70, CH75, etc.) are selected, the entered number flashes for 2 seconds and then the receiver reverts to the original channel.

NOTE3: The FM-77 maintains receiving condition on the original channel until the entry of new channel is completed.

NOTE4: Channel selection cannot be made during transmission.

2.3 U.S. Channels (*)

If your radio is U.S. version, you can switch the FM-77 to International channels or U.S.A. channels by pressing [*] key. "INT or "USA" is indicated on the LCD display accordingly.

2.4 PRIVATE CHANNEL MODE (*) (Special version only)

2.4.1 Private Mode

Press[M], and private channel last used is recalled. "prv M" and address no. from 1-9 are displayed. Press [Δ] or [∇] until the desired private channel is reached, or enter address no. via keypad.

2.4.2 Return to Normal Channel Mode

To return to normal channel mode, press either [16] or [M] keys. CH16 will be selected if [16] is pressed.

NOTE: Scandinavian Fish Boat channels and Pleasure Craft channels are handled as PRIVATE CHANNEL.

3. WEATHER CHANNEL MODE(*) (U.S. version only)

10 channels are programmed in weather channel addresses 1,2, ...,9 and 0 in the U.S. Version.

3.1 Weather Channel

Press [SHIFT] [*] keys, and the weather channel last used is recalled. "WX" and address "No. from 1-9" are displayed. Press [Δ] or [∇] repeatedly or hold down until desired weather channel is accessed. Channel may also be selected by entering the appropriate address via numeral keys.

NOTE: Transmission is inhibited on weather channels.

3.2 Return to Normal Channel Mode

To return to normal channel mode, press either [16] key, or [SHIFT] [*] keys. CH16 will be selected if [16] is pressed. You may then select another channel by pressing the corresponding keys.

4 DUAL WATCH

4.1 Function

Dual watch facilitates monitoring CH16 once a second while listening to the selected channel. When the signal is received on CH16, the receiver locks on CH16. When the signal is gone the lock is released, reinitiating the dual watch.

4.2 Other Channel

Set the desired channel in normal channel mode, weather channel mode (*) or private channel mode(*).

4.3 Dual Watch

Press [SHIFT][16], and dual watch is engaged. "DW" and the receiving channel is dispalyed.

4.4 To Cancel Dual Watch

Press [SHIFT] [16] again or PTT switch, and the other channel paired with CH16 will be selected. Press [16] to cancel and go directly to CH16.

5 MULTI WATCH

5.1 Function

Multi watch is similar to dual watch except that it allows monitoring of all ordinary channels by scanning upwards in the sequence 1 → 16 → 2 → 16 → 3 → 16 → 4 → 16 etc. If a signal is present on one of the ordinary channels, the receiver locks to that channel and begins watching that channel as well as CH16.

5.2 Activation

Press [SHIFT] [V] to activate multi watch. "MW" and the receiving channel are displayed.

5.3 To Cancel Multi Watch

Press [SHIFT] [V] or PTT to cancel multiwatch. The channel selected depends on the timing of cancellation. Press[16] to cancel and go directly to CH16.

6 TRANSMISSION

Speak into the microphone provided at the lefthand side of the bottom of the speaker grill, while keeping the PTT switch pressed.

7 TIMEOUT TIMER

IF your set has the timeout timer the display shows "Tx #" when the PTT switch is pressed. The timeout timer automatically limits the duration of a transmission to 5 minutes. An alarm sounds "beep-beep-beep" 15 and 5 seconds prior to end of transmission. This is to warn you that you are occupying the channel too long and may be interferring with other users. When the timer activates, the "TX" display starts flashing and both transmission and reception are inhibited. To resume normal operation, release the PTT switch.

8 ATIS (Dutch Inland version only)

When the ATIS option is fitted, digitally coded signals are automatically transmitted when the PTT switch is released or after every 5 minutes of continuous transmission. The duration of the signal is very short and will cause no inconvenience for the operator.

9 BEEP ON/OFF

Key operation is confirmed with beep sound. The beep sound can be disabled or enabled by pressing [SHIFT] continuously for 5 seconds. Sound level is controlled with the VOLUME control.

10 SQUELCH CONTROL

Squelch mutes audio output while the radio is receiving no signal. Rotate the squelch control clockwise until the noise is muted. Be careful: too high a setting will decrease the sensitivity, causing you miss desired signals.

11 VOLUME CONTROL

Adjusts the audio level. Rotate the volume control to increase audio level. This is combined with the power-off switch. When not in use, never fail completely turn off to save battery.

12 LCD DISPLAY

The LCD display is illuminated for nighttime operation by pressing the LCD LIGHT switch located above the PTT button.The LCD starts flashing when battery voltage drops below a certain level. When this happens you must get ready to recharge the battery pack.

13 LED INDICATOR

A red LED is provided on the top control panel. It lights when the PTT is pressed, indicating that the radio is in the transmitting condition. The LED also lights on channels where transmission is prohibited.

14 HI/LO OUTPUT SWITCH

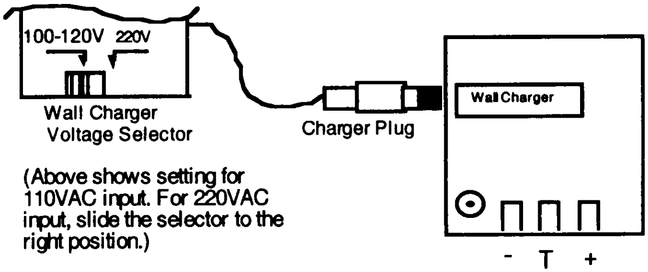
You can reduce output power to less than 1W by pressing [SHIFT] [0]. Pressing [SHIFT] [0] again restores output power to full.
This function is operative on any channel other than listed bolow:
International Version:
CH15, CH17, CH67 and CH77 (always LOW output)
U.S. Version:
CH13, CH17, CH67, CH77 (always LOW output) and CH15 (RECEIVE only)

15 HOW TO CHARGE BATTERY

Battery Charger (wall charger) BC-500

Set 110/220V select switch at 110V position for AC input of 100-120V, or at 220V position for AC input of 220-240V. Connect the DC plug to the jack on the battery pack. Charging time is about 15 hours. You can charge the battery pack alone or complete with the main unit. (Transceiver circuitry is electrically disconnected form the battery pack and not usable when the charger plug is inserted.)

CAUTION: If the charger becomes excessively hot, remove it from the mains supply and consult a dealer. The BC-500 is a charger exclusive for FURUNO handheld transceiver FM-77. (open terminal voltage: 16.5V typical)



(Above shows setting for 110VAC input. For 220VAC input, slide the selector to the right position.)

Tabletop Charger (quick charger) BC-501N, BC-503N

Set 110/220V select switch at 110V position for AC input of 100-120V, or at 220V position for AC input of 220-240V. Drop the main unit with the battery pack into the slot of BC-501N or into any slot of BC-503N. Full charge will be attained in 60-90 minutes. The charger will automatically turn to trickle charge after the quick charge.

CAUTION1: Shock or ambient temperature outside 10-40°C will change status from "quick" to "trickle" before full charge is reached. Switch off power and reinsert the radios. Avoid use at a room temperature above 40°C or below 10°C.

CAUTION2: For security purpose, do not leave the FM-77 or its battery pack in the charger more than necessary.

NOTE: Beware of AC supply. Transceiver is usable during charging with a tabletop charger. If TRICKLE or QUICK lamp is not lit, the charging contacts on the bottom of the battery pack are not in contact with the charger. Adjust the positioning of the pack back and forth, or left and right. The FM-77 can only be charged with one of the BC-500, BC-501N or BC-503N.

SPECIFICATIONS OF FM-77

GENERAL

1. **Frequency Range**	TX: 155.000 to 163.900 MHz RX: 155.000 to 163.900 MHz
2. **Channel Spacing** 25 kHz	
3. **Frequency Stability**	±1.5 kHz
4. **Class of Emission**	Frequency modulation with a preemphasis of 6 dB/octave (phase modulation, G3E)
5. **Antenna**	Helical whip (BNC connector provided for external 50 ohm antenna)
6. **Dimensions & Weight**	5W version,65 (W) X 197 (H) X 46 (D)mm, 600g 1.5W version, 65 (W) X 180 (H) X 46 (D)mm, 500g **Dimensions exclude projections.*

TRANSMITTER

1. **RF Output Power**	5, or 1.5W subject to authority approval. Reducible to below 1W CH13,15,17,77: Reduced power (Set for France is adjusted with 1W output.)

RECEIVER

1. **AF Output Power**	0.5W (12V battery) 0.25W (7.2V battery)
2. **Sensitivity**	SINAD 12dB: 0.4µV emf SINAD 20dB: 0.6µV emf

EQUIPMENT LIST

(Standard)
1. Main Unit
2. Battery Pack BP-512N (12V) or BP-507N (7.2V)
3. Wall Charger BC-500 for 110/220 VAC
4. Helical Whip Antenna
5. Operator's Manual
6. Vinyl Case
7. Hand Strap

(Optional)
1. Tabletop Quick Charger BC-501N for one radio, BC-503N for 3 radios
2. Earphone
3. Hard Case (Holster type)
4. Shoulder Belt
5. Belt Clip
6. Hand Speaker MIC
7. ATIS Unit
8. Battery Pack BP-512N
9. Battery Pack BP-507N

MARINE VHF CHANNEL FREQUENCIES (INTERNATIONAL VERSION)

CH	Ship TX	Ship RX	Type of operation
01	156.050	160.650	Public Correspondence, Port Operation
02	156.100	160.700	Public Correspondence, Port Operation
03	156.150	160.750	Public Correspondence, Port Operation
04	156.200	160.800	Public Correspondence, Port Operation
05	156.250	160.850	Public Correspondence, Port Operation
06	156.300	156.300	Safety
07	156.350	160.950	Public Correspondence, Port Operation
08	156.400	156.400	Intership
09	156.450	156.450	Port Operation
10	156.500	156.500	Port Operation
11	156.550	156.550	Port Operation
12	156.600	156.600	Port Operation
13	156.650	156.650	Bridge-to-bridge, Navigational
14	156.700	156.700	Port Operation
15	156.750	156.750	Coast-to-ship, 1W
16	156.800	156.800	Distress, Safety and Calling
17	156.850	156.850	State-controlled, Ship-to-coast, 1W
18	156.900	161.500	Port Operation
19	156.950	161.550	Port Operation
20	157.000	161.600	Port Operation
21	157.050	161.650	Port Operation
22	157.100	161.700	Port Operation
23	157.150	161.750	Public Correspondence
24	157.200	161.800	Public Correspondence
25	157.250	161.850	Public Correspondence
26	157.300	161.900	Public Correspondence
27	157.350	161.950	Public Correspondence
28	157.400	162.000	Public Correspondence
60	156.025	160.625	Public Correspondence, Port Operation
61	156.075	160.675	Public Correspondence, Port Operation
62	156.125	160.725	Public Correspondence, Port Operation
63	156.175	160.775	Public Correspondence, Port Operation
64	156.225	160.825	Public Correspondence, Port Operation
65	156.275	160.875	Public Correspondence, Port Operation
66	156.325	160.925	Public Correspondence, Port Operation
67	156.375	156.375	Port Operation
68	156.425	156.425	Port Operation
69	156.475	156.475	Port Operation
71	156.575	156.575	Intership, Port Operation
72	156.625	156.625	Intership
73	156.675	156.675	Port Operation
74	156.725	156.725	Port Operation
77	156.875	156.875	Intership, 1W
78	156.925	161.525	Port Operation
79	156.975	161.575	Port Operation
80	157.025	161.625	Port Operation
81	157.075	161.675	Port Operation
82	157.125	161.725	Port Operation, Public Correspondence
83	157.175	161.775	Public Correspondence
84	157.225	161.825	Port Operation, Public Correspondence
85	157.275	161.875	Public Correspondence
86	157.325	161.925	Public Correspondence
87	157.375	161.975	Public Correspondence
88	157.425	162.025	Public Correspondence

MARINE VHF CHANNEL FREQUENCIES (USA VERSION)

CH	Ship TX	Ship RX	Type of operation
01A	156.050	156.050	Port Operation, Commercial
05A	156.250	156.250	
06	156.300	156.300	Intership Safety
07A	156.350	156.350	Commercial
08	156.400	156.400	Commercial (Intership)
09	156.450	156.450	Commercial and Non-commercial
10	156.500	156.500	Commercial
11	156.550	156.550	Commercial
12	156.600	156.600	Port Operation
13	156.650	156.650	Bridge-to-bridge, Navigational, 1 W
14	156.700	156.700	Port Operation
15		156.750	Environmental (Receive only)
16	156.800	156.800	Distress, Safety and Calling
17	156.850	156.850	State-controlled, Ship-to-coast, 1W
18A	156.900	156.900	Commercial
19A	156.950	156.950	Commercial
20	157.000	161.600	Port Operation
21	157.050	157.050	US Government
22A	157.100	157.100	Coast Guard Liaision (Port safety)
23A	157.150	157.150	US Government
24	157.200	161.800	Public Correspondence
25	157.250	161.850	Public Correspondence
26	157.300	161.900	Public Correspondence
27	157.350	161.950	Public Correspondence
28	157.400	162.000	Public Correspondence
60	156.025	160.625	
61	156.075	160.675	
62	156.125	160.725	
63A	156.175	156.175	Vessel Traffic Service (USCG)
64	156.225	160.825	
65A	156.275	156.275	
66A	156.325	156.325	
67	156.375	156.375	Commercial (Intership)
68	156.425	156.425	Non-commercial
69	156.475	156.475	Non-commercial
71	156.575	156.575	Non-commercial
72	156.625	156.625	Non-commercial (Intership)
73	156.675	156.675	Port Operation
74	156.725	156.725	Port Operation
77	156.875	156.875	Port Operation (Intership), 1W
78A	156.925	156.925	Non-commercial
79A	156.975	156.975	Commercial
80A	157.025	157.025	Commercial
81A	157.075	157.075	US Governmental
82A	157.125	157.125	US Governmental
83A	157.175	157.175	US Governmental
84	157.225	161.825	Public Correspondence
85	157.275	161.875	Public Correspondence
86	157.325	161.925	Public Correspondence
87	157.375	161.975	Public Correspondence
88A	157.425	157.425	Commercial (Intership)
WX1		162.550	Weather (Receive only)
WX2		162.400	Weather (Receive only)
WX3		162.475	Weather (Receive only)
WX4		162.425	Weather (Receive only)
WX5		162.450	Weather (Receive only)
WX6		162.500	Weather (Receive only)
WX7		162.525	Weather (Receive only)
WX8		161.650	Weather (Receive only)
WX9		161.775	Weather (Receive only)
WX0		163.275	Weather (Receive only)